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EXAMINER

FISH, JAMIESON W

ART UNIT PAPER NUMBER

2616

DATE MAILED: 04/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/818,570

Applicant(s)

NAKAMURA ET AL.

Examiner

Jamieson W. Fish

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3-28-2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-14 and 16-21 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3-28-2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on 3/28/2001 and 6/25/2004 have been considered by the examiner.

Claim Rejections - 35 USC § 112

2. Claims **17-19** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim **17** recites the limitation "said virtual specialist" in lines 3 and 4. There is insufficient antecedent basis for this limitation in the claim. The broadcast storing system of claim 1 does not disclose a virtual specialist.
4. Claim **18** recites the limitation "said virtual specialist" in lines 3 and 4. There is insufficient antecedent basis for this limitation in the claim. The broadcast storing system of claim 1 does not disclose a virtual specialist.
5. Claim **19** recites the limitation "virtual specialist" in line 5. There is insufficient antecedent basis for this limitation in the claim. The broadcast storing system of claim 1 does not disclose a virtual specialist.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-7, 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Ismail et al. (US 6,614,987).
8. Regarding claim 1, Ismail teaches a broadcast program storing system, comprising: a preference learning means for learning preferences of a user for programs by viewing behavior of said user (See Fig. 1 Preference Agent 110 and Col. 4 lines 13-27); a degree of preference predicting means for predicting the degree of preference of said user for said programs by obtaining program information (See Col. 4 lines 13-27 and Col. 8 lines 21-40); and a storing planning means for choosing programs by solving a temporally expanded knapsack problem that obtains a solution in which the sum of predicted degree of satisfaction of said user in a planned schedule becomes maximal within a bound of a recording medium, when programs to be stored and programs to be deleted are decided (See Col. 9 lines 59-67 Col. 10 lines 1-63 The temporarily expanded knapsack problem was interpreted to mean maintaining the highest degree of user satisfaction in a memory of a recording device that is filled to capacity while programs are continuously being stored and deleted. The recording manager keeps the storage device filled to the maximum capacity by recording programs with the highest priority and deleting programs with the lowest priority).

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9. Regarding claim 2, Ismail teaches said storing planning means makes a storing plan of programs in the future and also makes a plan of the deleting time of stored programs at the same time (See Col. 10 lines 46-58 When a program is scheduled to be recorded a program is scheduled to be deleted if additional space is needed).

10. Regarding claim 3, Ismail teaches wherein said storing planning means makes said storing plan of said programs by utilizing efficiently a region of said recording medium where a program that said user reserves to record is recorded until right before said program starts (See Col. 10 lines 46-58 Programs are only deleted when need (right before new program is recorded)).

11. Regarding claim 4, Ismail teaches said storing planning means makes said storing plan of said programs by using a two-step-method in which first a program set to be stored at the ending time of said planned schedule is obtained and a program set to be stored at the intermediate time of said planned schedule for storing in the remaining vacant region of said recording medium is added (See Col. 9 lines 59-67 Col. 10 lines 1-63 Programs within a particular time period are rated. Programs are added to the recording schedule based on priority not on the time they are broadcasted within the time period. Therefore, if the program of highest preference was at the end of the time period and the program that was of second highest preference was at an intermediate time in the time period, first the program with the highest preference would be added to the recording schedule and then the program of second highest preference would be added the remaining memory space).

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12. Regarding claim 5, Ismail teaches when said storing planning means makes said storing plan of said programs by using said two-step-method, said program set to be stored at the ending time of said planned schedule is obtained by a dynamic programming in which a solution that makes the sum of said predicted degree of satisfaction of said user maximal is obtained (See Col. 9 lines 59-67 and Col. 10 lines 1-63 Highest rated programs are given highest preference).

13. Regarding claim 6, Ismail teaches wherein: when said storing planning means makes said storing plan of said programs by using said two-step-method, said program set to be stored at the ending time of said planned schedule is obtained by a greedy method in which a quasioptimal solution of said predicted degree of satisfaction of said user is obtained by choosing a larger predicted degree of satisfaction in a predicted degree of satisfaction by unit storing time (See Col. 9 lines 59-67, Col. 10 lines 1-62 Programs are prioritized for a time increment X. This is choosing by a unit storing time.) and a predicted degree of satisfaction by unit storing time times survival time. (See Col. 9 lines Col. 10 lines 1-62. Survival time is defined in the specification as time of recording to time of erasure (Page 14 lines 4-5.) Programs are prioritized for a time increment X. This prioritizing may be repeated every six hours. This six hour time period is survival time since programs ranking lower than programs appearing in the new time increment are deleted at this time. Thus, programs are prioritized by unit storage time times survival time).

14. Regarding claim 7, Ismail teaches wherein: when said storing planning means makes said storing plan of said programs by using said two-step-method, said program

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set to be stored at the intermediate time of said planned schedule for storing in the remaining vacant region of said recording medium is added by said greedy method in which a quasioptimal solution of said predicted degree of satisfaction of said user is obtained by choosing a larger predicted degree of satisfaction in a predicted degree of satisfaction by unit storing time (See Col. 9 lines 59-67, Col. 10 lines 1-62 Programs are prioritized for a time increment X. This is choosing by a unit storing time.) and a predicted degree of satisfaction by unit storing time times survival time. (See Col. 9 lines Col. 10 lines 1-62. Survival time is defined in the specification as time of recording to time of erasure (Page 14 lines 4-5.) Programs are prioritized for a time increment X. This prioritizing may be repeated every six hours. This six hour time period is survival time since programs ranking lower than programs appearing in the new time increment are deleted at this time. Thus, programs are prioritized by unit storage time times survival time).

15. Regarding claim 12, the USPTO considers the Applicants "or" language anticipated by any reference containing any of the subsequent corresponding elements. Ismail teaches wherein said predicted degree of satisfaction is a predicted degree of preference (See Col. 10 lines 1-14), or said predicted degree of preference times a program length, or said predicted degree of preference times said program length times survival time.

16. Regarding claim 13, the USPTO considers the Applicants "or" language anticipated by any reference containing any of the subsequent corresponding elements. Ismail teaches wherein: said predicted degree of satisfaction is a predicted degree of

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preference (See Col. 10 lines 1-14), or said predicted degree of preference times a program length, or said predicted degree of preference times said program length times survival time.

17. Regarding claim 14, the USPTO considers the Applicants "or" language anticipated by any reference containing any of the subsequent corresponding elements. Ismail teaches wherein: said predicted degree of satisfaction is a predicted degree of preference (See Col. 10 lines 1-14), or said predicted degree of preference times a program length, or said predicted degree of preference times said program length times survival time.

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 8-9, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ismail in view of Berstis (US 6,564,005).

20. Regarding claim 8, Ismail teaches wherein: when said storing planning means uses said greedy method, said storing plan is made considering the largeness of said predicted degree of satisfaction (See Col. 10 lines 1-31). Ismail fails to disclose wherein said storing plan also checks whether elements required to record such as tuners are secured or not. However, recording devices that security protocols that do not record

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programs until security protocols are met are well known in the art as taught by Berstis (See Fig. 7 and Col. 8 lines 1-16). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ismail's recording system to include to whether or not recording elements are secure as taught by Berstis to restrict users from recording television programs (See Berstis Col. 1 lines 63-66)

21. Regarding claim **9**, Ismail teaches wherein: when said storing planning means uses said greedy method, said storing plan is made considering the largeness of said predicted degree of satisfaction (See Col. 10 lines 1-31). Ismail fails to disclose wherein said storing plan also checks whether elements required to record such as tuners are secured or not. However, recording devices that security protocols that do not record programs until security protocols are met are well known in the art as taught by Berstis (See Fig. 7 and Col. 8 lines 1-16). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ismail's recording system to include to whether or not recording elements are secure as taught by Berstis to restrict users from recording television programs (See Berstis Col. 1 lines 63-66).

22. Regarding claim **21**, Ismail fails to disclose a compression rate designating means for designating a compression rate for each program when each program is stored. Berstis teaches a compression rate designating means for designating a compression rate for each program when each program is stored (See Fig. 10 Quality 526 and Col. 9 lines 5-9 Designating the quality is the same as designating the compression rate since compression rate is used to determine quality). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was

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made to modify Ismail's system to include a compression rate designating means as taught by Berstis to allow the user to determine how much memory a program will occupy (See Col. 9 lines 5-9).

23. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ismail et al. in view of Bedard (US 5,801,747) and further in view of Schindler (US 5,995,155).

24. Regarding claim 10, Ismail teaches wherein: when said storing planning means uses said greedy method, said storing plan is made by the statistics of the past viewing behavior of said user (See Col. 8 lines 21-46). Ismail also teaches keeping track of the genre of programs that are viewed and programs that are recorded (Col. 8 lines 21-46 and Col. 10 lines 32-63 Categories (genres) are used to prioritize). Ismail fails to disclose keeping a ratio among viewing minutes of each genre of programs and a discount rate for part exceeding from said viewing minute ratio of each genre is calculated and the balance among said genres is kept, when the degree of satisfaction at the time that the programs to be stored are chosen one by one is calculated. Bedard teaches keeping a ratio among viewing minutes of each genre of programs (See Fig. 2 Col. 4 lines 7-10, 27-67 and Col. 5 lines 1-33) and that ratios are continuously accumulated (Col. 8 lines 65-67 and Col. 9 lines 1-6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ismail's system so that it kept track of the ratio of viewing minutes of programs of each genre in both the viewing history and recoding schedule as taught by Bedard in order to

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have a standardize way to measure the user preference of each genre (See Col. 4 lines 32-37). Ismail modified with Bedard fails to compare the ratio of genres for programs scheduled to be recorded to the ratio of genres for viewed program. However, comparing the programs scheduled to be recorded to programs already recorded is well known in the art at taught by Schindler (See Col. 4 lines 16-19 This must be done to avoid duplicate recordings). Therefore, is would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Ismail and Bedard to compare the ratio of genres of scheduled to be recorded to the ratio of genres of programs already recorded to avoid redundancy in program recording.

25. Regarding claim 11, Ismail teaches wherein: when said storing planning means uses said greedy method, said storing plan is made by the statistics of the past viewing behavior of said user (See Col. 8 lines 21-46). Ismail also teaches keeping track of the genre of programs that are viewed and programs that are recorded (Col. 8 lines 21-46 and Col. 10 lines 32-63 Categories (genres) are used to prioritize). Ismail fails to disclose keeping a ratio among viewing minutes of each genre of programs and a discount rate for part exceeding from said viewing minute ratio of each genre is calculated and the balance among said genres is kept, when the degree of satisfaction at the time that the programs to be stored are chosen one by one is calculated. Bedard teaches keeping a ratio among viewing minutes of each genre of programs (See Fig. 2 Col. 4 lines 7-10, 27-67 and Col. 5 lines 1-33) and that ratios are continuously accumulated (Col. 8 lines 65-67 and Col. 9 lines 1-6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

Ismail's system so that it kept track of the ratio of viewing minutes of programs of each genre in both the viewing history and recoding schedule as taught by Bedard in order to have a standardize way to measure the user preference of each genre (See Col. 4 lines 32-37). Ismail modified with Bedard fails to compare the ratio of genres for programs scheduled to be recorded to the ratio of genres for viewed program. However, comparing the programs scheduled to be recorded to programs already recorded is well known in the art at taught by Schindler (See Col. 4 lines 16-19 This must be done to avoid duplicate recordings). Therefore, is would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Ismail and Bedard to compare the ratio of genres of scheduled to be recorded to the ratio of genres of programs already recorded to avoid redundancy in program recordings.

26. Claim **20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ismail in view of Azadegan (US 5,819,004)

27. Regarding claim **20**, Ismail teaches compressing digital data before storage (See Col. 13 lines 28-42), but fails to disclose recompressing means for recompressing stored data of said programs stored once. Recompressing stored data is well known in the art as taught by Azadegan (See Abstract Col. 8 lines 45-58 Data supplied from VTR is recompressed). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ismail so that stored data could be recompressed as taught by Azadegan to allow a user to alter the quality of stored video data (See Abstract).

Allowable Subject Matter

28. Claim **15** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

29. Claims **16-19** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

30. The following is a statement of reasons for the indication of allowable subject matter:

31. Regarding claim **15**, Ismail teaches a broadcast programming system wherein: said degree of preference predicting means and said preference learning means, comprising: a system, wherein: an electronic text being program information received from broadcasting or telecommunication is transformed into an attribute vector consisting of keywords (See Col. 5 lines 10-67 and Col. 6 lines 1-34 Category pairs are attribute vectors consisting of keywords); a preference function expressing a relation between an estimated degree of preference estimated from viewing behavior of a user and said attribute vector is learned (See Col. 6 line 35-Col. 8 line 45 The weights of the rating function (preference function) are dynamically created (learned) based of viewing statistics. Since the weights used in the function are learned the function is also learned); a preference function value of said attribute vector is made to be a predicted degree of preference for a program to be stored (See Col. 10 lines 1-9 The value of the

rating function is used to determine which programs are stored). Ismail fails to disclose a virtual specialist that predicts only when a keyword is in said attribute vector for every program, and weighting of said virtual specialist are set; said prediction is implemented by a weighted average prediction of said virtual specialist; and learning is implemented by adjusting said weighting, at said system, as a predicted value of said virtual specialist corresponding to each keyword, an average value of said estimated degree of preferences of programs having said attribute vector including the keyword, or a Laplace estimation value $(\text{accumulated estimated degree of preference} + 0.5) / (\text{number of appearances} + 1.0)$ of said estimated degree of preferences is used; and learning is implemented by that weighting of said virtual specialist of the estimated degree of preference q is multiplied by $r q / p + (1-r) (1-q) / (1-p)$, in this, p is a predicted weighted average of said virtual specialist and r is an estimated degree of preference from actual viewing behavior of said user. Although Freund gives a general teaching of using a virtual specialist model, there is no motivation to modify Ismail with a specific example of Freund's model to meet the claimed limitations.

32. Regarding claim 16, the prior art does not teach a broadcast program storing system in accordance with claim 1, wherein: at said degree of preference predicting means and said preference learning means, a system is used, and said system, comprising: a preference information server via a telecommunication means, wherein: similarity of preferences among users is learned by the estimated degree of preferences of past programs transmitted via said telecommunication means; and a degree of preference of a user to be predicted for a future program to be stored by said user is

estimated by using the estimated degree of preferences of said users for programs transmitted already and said similarity between said user to be predicted and said users, at said system, a virtual specialist and weighting that implement a prediction, only when the estimated degree of preferences of similar users for every similar user of each user is known, are set, prediction is implemented by the weighted average of the prediction of said virtual specialist, learning is implemented by adjusting said weighting, the estimated degree of preference of said similar user is used as the predicted value of said virtual specialist corresponding to each similar user, and learning is implemented by that the weighting of said virtual specialist of the estimated degree of preference q is multiplied by $rq/p+(1-r) (1-q)/(1-p)$, in this, p is a predicted weighted average of said virtual specialist and r is an estimated degree of preference from actual viewing behavior of said user.

33. Regarding claim 17, the prior art does not teach a broadcast program storing system in accordance with claim 1, wherein: both of said virtual specialist claimed 15 and said virtual specialist claimed 16 are used, and said prediction is implemented by the weighted average of said two specialists, and learning is implemented by that weighting of said claim 15 is multiplied by $rp_c/p+(1-r) (1-p_c)/(1-p)$, and weighting of said claim 16 is multiplied by $rp_s/p+(1-r) (1-p_s)/(1-p)$, in this, a predicted degree of preference by said claim 15 is defined as p_c , a predicted degree of preference by said claim 16 is defined as p_s , a final predicted degree of preference (average of the predicted degree of preference by both said claims 15 and 16) is defined as p , and an estimated degree of preference estimated by said viewing behavior is defined as r .

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34. Regarding claim **18**, the prior art does not teach a broadcast program storing system in accordance with claim 1, wherein: both of said virtual specialist claimed 15 and said virtual specialist claimed 16 are used, and said prediction is implemented by the weighted average of said two specialist, and learning is implemented by using the weighted average of all of said virtual specialists instead of predicted weighted average p of said claims 15 and 16.

35. Regarding claim **19**, the prior art does not teach a broadcast program storing system in accordance with claim 1, wherein: at said degree of preference predicting means, the weighted average of standard deviation of said predicted degree of preference of each virtual specialist is regarded as being uncertainty, and final predicted degree of preference is that constant times of said uncertainty is added to said predicted weighted average of said virtual specialists

Conclusion

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jamieson W. Fish whose telephone number is 571-272-7307. The examiner can normally be reached on Monday-Friday, 8:00-5:30.

37. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Vu can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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38. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JF
3/17/2005



NGOC-YEN VU
PRIMARY EXAMINER